

**TRANSLATION**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>04S1790P</b>	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416
International application No. <b>PCT/JP2004/019251</b>	International filing date ( <i>day/month/year</i> ) <b>22.12.2004</b>	Priority date ( <i>day/month/year</i> ) <b>26.12.2003</b>
International Patent Classification (IPC) or national classification and IPC <b>F27B5/18, F27D19/00, H01L21/22</b>		
Applicant <b>TOKYO ELECTRON LIMITED</b>		

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2.	This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.	
3.	This report is also accompanied by ANNEXES, comprising: a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>6</u> sheets, as follows: <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4.	This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application	

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. I

Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-9 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. 9-11, 20 as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 1, 4, 12, 15, 21-24 received by this Authority on 15, 07, 2005
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets fig. 1-5B as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, nos. 2, 3, 5-8, 13, 14, 16-19
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	<u>1, 4, 9-12, 15, 20-24</u>	YES
	Claims	<u></u>	NO
Inventive step (IS)	Claims	<u></u>	YES
	Claims	<u>1, 4, 9-12, 15, 20-24</u>	NO
Industrial applicability (IA)	Claims	<u>1, 4, 9-12, 15, 20-24</u>	YES
	Claims	<u></u>	NO
2. Citations and explanations (Rule 70.7)			
<p>Document 1: JP 03-079985 A (Kabushiki Kaisha Disco Hitech), 04 April 1991</p> <p>Claims 1, 4, 9 to 12, 15 and 20 to 24</p> <p>Document 1 cited in the international search report discloses a method for controlling the temperature of an electric furnace, which is characterized in that the temperature on the interior of the furnace is stabilized in a short period of time by supplying a cooling medium to the heating region, which comprises a heater that is disposed on the outer peripheral surface of the reaction tube, as appropriate in order to control overshooting due to the ramp-up; therein, document 1 indicates that overshooting is prevented by supplying the cooling medium to the heating region when the temperature on the interior of the furnace reaches a prescribed temperature or immediately before the temperature on the interior of the furnace reaches a prescribed temperature (refer to the claims and fig. 1, etc.), and further indicates that the invention disclosed therein is a method for controlling the temperature on the interior of an electric furnace for heat-treating semiconductor wafers so that said temperature is stabilized at a prescribed</p>			

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temperature in a short period of time (refer to page 1, right column).

Document 1 indicates that the temperature on the interior of the furnace is stabilized in a short period of time by supplying a cooling medium, as appropriate, in order to control overshooting (refer to the claims, etc.), and presents examples of specific control techniques within the detailed description of the invention; however, the technique for supplying the cooling medium is not limited to only the techniques from the specific examples presented therein. Furthermore, it is obvious that increasing the number of objects being controlled is advantageous in that it becomes possible to increase the response speed, the precision of the control and the like, but is disadvantageous in that the control becomes more complex, more difficult to implement and the like. Thus, although the invention disclosed in document 1 controls both the heater and the cooling system, given the advantages and disadvantages of decreasing the number of objects being controlled it is thought that a person skilled in the art could conceive of simplifying the control technique, as appropriate, by configuring so that only the heater is controlled during a part of the heating process.

In addition, the invention disclosed in document 1 controls two objects that have conflicting actions, i.e. the heater and the cooling system, and the simultaneous operation of both the heater and the cooling system will result in a significant loss of energy. Such being the case, it is considered to have been easy for a person skilled in the art to conceive of attempting to decrease the energy loss as much as possible by configuring so

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that both the heater and the cooling system are  
controlled using a single control variable.